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J. Lamb / 1034A

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CARBIDE AND CARBON CHEMICALS CORPORATION

UNIT OF UNION CARBIDE AND CARBON CORPORATION

UCC

POST OFFICE BOX P

OAK RIDGE, TENN.

DOWN GRADE

RECEIVED FEB 25 1946

February 19, 1946

The District Engineer
U. S. Engineer Office
Post Office Box E
Oak Ridge, Tennessee

Attention: Lt. Col. R. W. Cook

Subject: Disposal of Sludge Accumulated in Settling Tank of 1405 Building

REPORT NO. 1658

Dear Col. Cook:

HISTORICAL:

On August 1, 1945, Mr. H. F. Priest pointed out that a large quantity of solid deposits . . . sludge . . ., containing perhaps 1500 pounds of low assay T, had accumulated in the settling tank of the C-216 disposal system in Building 1405, and offered suggestions for removal of the sludge.

In September, at Mr. Kinsey's request, Dr. Beck obtained estimates of the amount and assay of T present, and outlined to Captain Beckwith a plan for removing the sludge to a specially prepared concrete-walled and covered pit. Approval of this general plan was given by Lt. Col. Cook on September 21, and at the same time, request was made for details of construction and location.

Mr. Huber was advised of the proceedings and was asked to prepare the sketch of the job, engineering and construction requests, etc. These were prepared in due course, approved by the Army, and delivered to the Maintenance Department for construction.

Meanwhile, several attempts were made to obtain a reliable determination of the quantity and quality of T in the tank. This proved extremely difficult. The inhomogenieties of deposits in the tank, sloping bottom, gradations in density and large quantity of contents, made adequate sampling almost impossible. Some success was achieved, however.

PRESENT STATUS:

Dr. Beck received advice by telephone on February 15, 1946, from the Maintenance Department, that construction of the job has been completed. The pit is ten feet deep, fifteen feet wide, and twenty feet long, with concrete walls extending three feet above the ground (included in the above depth measurements), and a concrete top containing manholes and sampling holes. The bottom is unlined at present. Thus, the pit has

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total capacity of 3000 cubic feet, which is considerably more than the expected requirements for the sludge. The excess capacity was provided for (1) future additions of possible accumulations of similar materials and (2) for disposal of the large amount of spent carbon now on hand containing "below feed" grades of T.

SPECIFIC PROPOSALS:

(1) In line with the plan described above, to which general approval has already been given, Carbide proposes to remove the accumulated sludge from the settling tank in Building 1405 and place it in the pit which has been prepared. The best estimates which can be obtained in advance indicate that there are 825 pounds of T at an average 235 isotopic concentration of 0.682%. As disposition of the sludge is in progress, frequent and more exact analyses (possible because of better sampling accessibility) will be made, thus permitting a very accurate record to be kept of the pit contents.

(2) In addition to the above, Carbide proposes to deposit in the pit the accumulated inventory of spent carbon (and small amounts of alumina) containing less than 0.6% isotopic concentration of 235. There is approximately 90,000 pounds of this material containing an estimated 15,000 pounds of T. In the present scheme of operations, there is no intended use of this material, and hence it only presents an unwieldy storage problem. If disposal into the pit is made, the storage problem is solved, and the material still remains easily accessible for any possible future recovery operations.

The possibility of a chain reaction has been considered. All available information, including the Smythe report, indicates that only by extreme purification of all constituents and very carefully calculated latticed arrangements of moderator, reflector and uranium, can a sustained chain reaction be achieved with normal material. Since the proposed contents of the pit are far from pure, the arrangement very unfavorable, and the isotopic concentration below normal, no chain reaction is believed possible.

In depositing the spent carbon, analysis of each batch will be made to insure that no material be included above 0.6% 235 content.

REQUEST FOR APPROVAL:

May we have a statement on approval of the proposals described above.

Very truly yours,

CARBIDE AND CARBON CHEMICALS CORPORATION

for C. E. Center

CEC:dj
C. K. Beck
cc: Mr. P. L. Alspaugh
Mr. C. N. Rucker
Dr. D. E. Hull
Mr. H. F. Priest
Mr. A. P. Huber
Dr. C. K. Beck
Mr. C. E. Center